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COMPLETE SPECIFICATION

Liquid Separators for Use in Plant for the Manufacture of Paper and Cellulosic Webs

We, SULZER FRERES, SOCIETE ANONYME, a Company organised under the Laws of Switzerland, of Winterthur, Switzerland, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to liquid separators suitable for use in plant for the manufacture of paper and cellulosic webs, and of the kind having a separating chamber containing a deflector member, which may be umbrella-shaped, and which conducts liquid to the side walls of the separating chamber, an inlet for the mixture to be separated disposed above the deflector member, and a discharge pump connected to a liquid outlet branch.

According to the invention the deflector member is eccentrically offset towards, or extended towards, the wall of the separating chamber above the liquid outlet. In the region above the liquid outlet, therefore, little or no liquid will flow downwardly, so that in front of the outlet the liquid pool will remain fairly calm and no eddies will occur which might be detrimental to the discharge pump directly connected to this outlet.

Advantageously, the deflector member is connected with a liquid-tight seal to the wall of the separating chamber in the region above the liquid outlet. Since as a rule a relatively large amount of liquid is separated per unit time and flows down the sector of the deflector member where the liquid-tight seal is provided, substantial streams of liquid run off helically downwards from both ends of the seal. In consequence of the horizontal component of motion of these streams of liquid they enter the liquid pool in the bottom of the separator only at a substantial distance from the liquid outlet.

In one form of the invention the deflector member has an aperture in its top through which can pass air displaced from beneath

the deflector by the separated liquid, and there is an additional screening member, which may also be approximately umbrella-shaped, disposed above and spaced from the said aperture. In this manner separate paths are provided for the downwardly-flowing separated liquid and the upwardly-flowing air that is displaced by the liquid from the lower part of the separating chamber, so that the two media can flow without mutual disturbance.

Preferably, the side walls of the separating chamber converge conically downwards. The effect is thus achieved that liquid which may drip off the free edges of the deflector member will not fall directly into the pool of liquid collected at the bottom but will drip on to the side walls so that no foam is formed.

The invention may be performed in various ways and one particular embodiment, a liquid separator suitable for use in a paper making plant, will now be described by way of example with reference to the accompanying drawings, in which:—

Fig. 1 is a sectional elevation of the liquid separator; and

Fig. 2 is a plan view of the separator with the top cover removed.

As shown in the drawings, the separator is provided with an inlet pipe 1 for the air-liquid mixture to be separated and with an air outlet pipe 2. The side walls of the lower part 4 of the separator converge conically downwards, and an approximately umbrella-shaped deflector member 5 is provided for conducting the separated liquid to the side walls of the lower part 4. The deflector member 5 has at its apex an aperture 6 for the rising air displaced from within the lower part 4 of the separator during the downward flow of the separated liquid. The aperture 6 is shielded by a cap 7 which is also approximately umbrella-shaped and which is spaced from the deflector member 5 by means of

spacing members 8 between which the air can flow.

The deflector member is offset, eccentrically, to the right as shown in the drawings, by the distance a , so that its right-hand sector 9 approaches close to the corresponding sector of the side wall of the lower part 4. In this sector the deflector member is supported on a wide bracket 10 subtending approximately a right angle at the axis of the separator and mounted on the side wall of the lower part 4. On the opposite side it is supported by two narrow brackets 11 (Fig. 2). A liquid outlet pipe 12 which leads to a discharge pump 14 driven by a motor 13 is connected to the lower part 4 of the separator on the side towards which the deflector member 5 is offset, i.e. below the bracket 10. Thus in the region above the liquid outlet 12, the separated liquid cannot flow down the side wall directly but is deflected over the two ends 15 of the bracket 10 in helical paths along the wall, as indicated by the arrows 17.

In modifications (not illustrated) the deflector member 5 is still further offset in the direction of the sector of the wall situated above the outlet pipe 12 until it touches this wall, or is extended in this direction without being eccentrically offset. In these modifications the sector of the deflector member touching the separator wall is joined to this wall with a liquid-tight seal.

WHAT WE CLAIM IS:—

1. A liquid separator for use in plant for the manufacture of paper and cellulosic webs, comprising a separating chamber containing a deflector member which conducts liquid to the side walls of the separating chamber, an inlet for the mixture to be separated disposed above the deflector member, and a discharge pump connected with a liquid outlet from the separating chamber, the deflector member being eccentrically offset towards, or extended towards, the wall of the separating chamber above the liquid outlet.

2. A liquid separator as claimed in Claim 1 in which the deflector member is connected with a liquid-tight seal to the wall of the separating chamber in the region above the liquid outlet.

3. A liquid separator as claimed in Claim 1 or Claim 2 in which the deflector member has an aperture in its top through which can pass air displaced from beneath the deflector by the separated liquid, and in which there is an additional screening member disposed above and spaced from the said aperture.

4. A liquid separator as claimed in any of the preceding Claims in which the side walls of the separating chamber converge conically downwards.

5. A liquid separator substantially as described with reference to the accompanying drawings.

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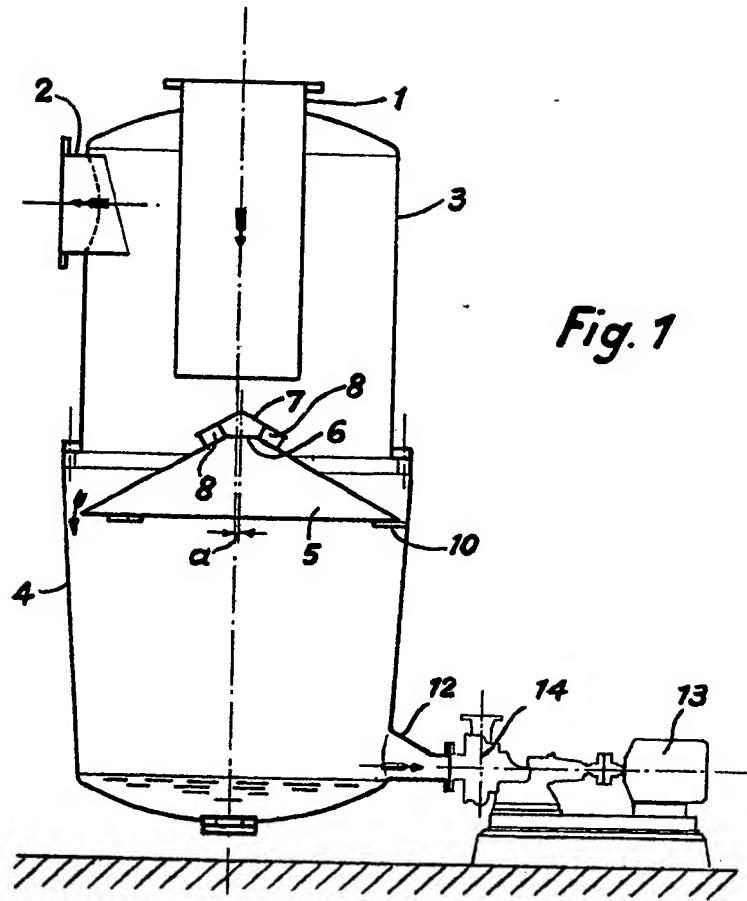


Fig. 2

